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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/676,844	09/29/2000	Bryan R White	10559-165001/P8249	3643
20985	7590	02/04/2004	EXAMINER	
FISH & RICHARDSON, PC 12390 EL CAMINO REAL SAN DIEGO, CA 92130-2081			MONESTIME, MACKLY	
			ART UNIT	PAPER NUMBER
			2676	18

DATE MAILED: 02/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/676,844

Applicant(s)

WHITE, BRYAN R

Examiner

Mackly Monestime

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 15.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

1. Claims 1-16 are still pending in the application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 7-9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nielsen et al (US Patent No. 6,104,417) in view of Smith et al (US Patent No. 6,513,099).

4. As per claims 1 and 13, Nielsen et al substantially disclosed the invention as claimed, including a memory controller hub comprising: an internal graphics subsystem adapted to perform graphics operations on data (Fig. 2B; Item No. 218).

Nielsen et al did not disclosed a cache adapted to store addresses of locations in physical memory available to the graphics subsystem for storing graphics data and available to an external graphics controller hub to store graphics data. However, Smith et al disclosed a cache adapted to store addresses of locations in physical memory available to the graphics subsystem for storing graphics data and available to an external graphics controller hub to store graphics data (Fig. 3,

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Item No. 314; col. 3, lines 13-20; col. 4, lines 59-67). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have utilized the memory controller disclosed by Smith et al into the system of Nielsen et al because doing so would provide a more flexible and expandable graphics system by allowing the memory controller to accommodate a plurality of I/O devices such as PCI Interface for providing PCI bus interface, routers, graphics interface and interface controller.

5. As per claim 7, Nielsen et al substantially disclosed the invention as claimed, including a CPU (Fig. 2, Item No. 206); a display device (col. 2, lines 48-50); a system memory adapted to store video data and non-video data (Fig. 2, Item No. 202); and a memory controller hub coupled to the CPU (Fig. 2, Item No. 204) and coupled to the system memory (Fig. 2, Item No. 202), the memory controller hub comprising: an internal graphics subsystem adapted to perform graphics operations on data (Fig. 2B; Item No. 218).

Nielsen et al did not disclosed a cache adapted to store addresses of locations in physical memory available to the graphics subsystem for storing graphics data and available to an external graphics controller hub to store graphics data. However, Smith et al disclosed a cache adapted to store addresses of locations in physical memory available to the graphics subsystem for storing graphics data and available to an external graphics controller hub to store graphics data (Fig. 3, Item No. 314; col. 3, lines 13-20; col. 4, lines 59-67). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have utilized the memory controller disclosed by Smith et al into the system of Nielsen et al because doing so would provide a more

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flexible and expandable graphics system by allowing the memory controller to accommodate a plurality of I/O devices such as PCI Interface for providing PCI bus interface, routers, graphics interface and interface controller.

6. As per claims 2-3 and 8-9, Nielsen et al disclosed a dedicated bus interface coupling to the graphics controller to the memory controller hub (col. 4, lines 19-21).

7. Claims 4-6, 10-12 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nielsen al in view of Dye et al as applied to claims 1-3, 7-9 and 13 above, and further in view of Hussain et al (US Patent No. 6,667,745).

8. As per claims 4-6, 10-12 and 14-16, Nielsen et al did not disclosed a cache adapted to store addresses of locations in physical memory. However, Smith et al disclosed a cache adapted to store addresses of locations in physical memory (Fig. 3, Item No. 314; col. 3, lines 13-20; col. 4, lines 59-67).

The combination did not explicitly disclose that the memory controller is configured to provide a block of linear, virtual memory address for use by graphics subsystem or graphics controller. However, Hussain disclosed a graphics controller which utilizes tile frame buffer linear mapping system to perform mapping functions that facilitate mapping of linear virtual addresses to a physical memory address (col. 9, lines 25-38). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the cited references because doing so would not only allow the graphics system to communicate information to and from a memory in an efficient manner, including translation or conversion between different

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virtual address configurations and physical memory address, thereby enhance the processing speed of the graphics system.

Conclusion

Applicant is required to give full consideration to these prior art references when responding to this office action.

The prior arts made of record and not relied upon is considered pertinent to applicant's disclosure.

Tischler et al (US Patent No. 6,591,347) taught a dynamic replacement in a shared cache.

Kang (US Patent No. 6,480,192) taught a multi-function controller and method for a computer graphics display.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mackly Monestime whose telephone number is (703) 305-3855. The examiner can normally be reached on Monday to Thursday from 7:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bella Matthew, can be reached on (703) 308-6829.

Any response to this action should be mailed to:

Commissioner of Patent and Trademarks

Washington, D.C. 20231

or faxed to:

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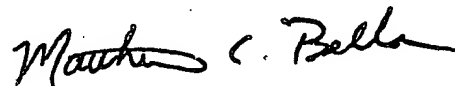
(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,
Arlington, Va, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding
should be directed to the Technology Center 2600 Customer Service Office whose telephone
number is (703) 306-0377.

Mackly Monestime

Patent Examiner



**MATTHEW C. BELLA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600**

January 21, 2004